CHAPTER 12 ENERGY EMERGENCY PREPAREDNESS

12.1 Hawaii's Energy Emergency Challenge and Response

12.1.1 Hawaii's Potential Exposure to Energy Emergencies

Hawaii's geographic isolation and dependence on imported oil make Hawaii's people critically vulnerability to serious energy shortages. Hawaii's energy situation is detailed in Chapter 3.

The combination of over-dependence on oil, isolation from sources of supply, and the unpredictability of the world oil market create a great deal of energy security concern for Hawaii. Depending on the length and severity of an energy shortage, the outcome could range from inconvenience to a disaster situation requiring civil defense mobilization. The challenge for Hawaii is to be as prepared as possible to effectively contend with energy emergencies and threats to Hawaii's energy security. Energy emergencies can stem from oil market disruptions or from disasters (natural and man-made). Such events could lead to an energy shortage.

In the context of energy emergency preparedness, an "energy shortage" exists whenever the Governor determines that an increase in energy demand or a decrease in available energy supply, or both, may create a major adverse impact on the economy that the free market distribution system is unable to manage.

12.1.2 The State of Hawaii Energy Emergency Preparedness Program

The State's Energy Emergency Preparedness program (EEP) is structured to address both market and disaster-related energy emergencies. The State's EEP Program is made effective only by the hard work and cooperation of Hawaii's private sector energy companies – the front-line energy emergency responders. The State's EEP Program to assist industry is only activated when the private sector is stretched beyond its capabilities.

12.1.3 Recent Developments in the EEP Program

In 1991, the State of Hawaii's EEP was updated. Since 1991, additional important developments have occurred to further contribute to sound energy emergency policies and actions.

In 1992, the Hawaii State Legislature passed legislation, later enacted as Act 182, which completely overhauled the State's EEP statute by incorporating provisions for coordinated State and County EEP planning.

In 1996, an assessment of the vulnerability of Hawaii's energy systems to natural disasters was completed by the Federal Emergency Management Agency (FEMA), U.S. Department of Energy (USDOE), State Civil Defense (SCD), and the Energy, Resources, and Technology Division (ERTD) of the Department of Business, Economic Development & Tourism (DBEDT), in cooperation with Hawaii's energy industry. (See Appendix D for the recommendations and responses to this assessment.)

On May 6–8, 1998, the State of Hawaii conducted a *Regional Energy Emergency Seminar and Simulation Exercise* for Hawaii, the Western states, and Pacific Island Territories. This event, funded by a USDOE grant, was co-sponsored by the USDOE, the National Association of State Energy Officials, and the Pacific Disaster Center (PDC). Its purpose was to test and evaluate the effectiveness of a coordinated public- and private-sector response to an energy emergency and to test the operational concept developed by the Energy Council (EC). The EC approach was examined as an application that may be applicable in other jurisdictions, based on its demonstrated success in the aftermath of Hurricane Iniki, in 1992, and in a statewide energy emergency simulation exercise in 1997. Also, direct on-line connection to the PDC (located on Maui) through multiple computer workstations assisted the exercise by simulating a hurricane-related energy emergency and by providing a common situation electronic reporting format. This seminar and exercise were the premier events of SCD's annual statewide hurricane exercise, *Makani Pahili* 98.

On November 13, 1998, a new federal law (Public Law 105-388) was enacted by President Clinton, which provides Hawaii and the insular U.S. Pacific and Atlantic Territories priority access to Strategic Petroleum Reserve (SPR) oil in the event of a drawdown. This legislation, introduced by Senator Daniel Akaka, was passed with the support of Senator Daniel Inouye and Hawaii's Congressional representatives. DBEDT, in cooperation with Hawaii's energy industry, developed the policy analyses for priority access. On September 27, 1999, a memorandum of understanding to effect procedures for implementing Hawaii's priority access to SPR oil in the event of drawdown was executed by the State of Hawaii with the USDOE.

In September 1999, the U.S. Army Corps of Engineers (CORPS) completed a supplemental study on coastal hazard mitigation. Also, in September, the State initiated a project to survey emergency and essential service facilities with generators for the purpose of documenting emergency power requirements and technical specifications for generators.

The State ERTD remains very active in relevant emergency management activities such as:

- A USDOE Peer Exchange Meeting on Energy Emergencies and Y2K, in Port Orchard, Washington, September 15–16, 1999, to discuss and develop state energy emergency management and Y2K contingency planning for the Western states;
- The State and USDOE conducted a Workshop on Photovoltaics for Essential Services, September 13, 1999, on Kauai, and again on September 16th, on Oahu, which explored the application of photovoltaics for disaster relief; and
- The State participated in an Asia-Pacific Disaster Conference, on Kauai, September 19–23, 1999, to share emergency response expertise that with potential regional application.

EEP programs are designed to prepare for a wide range of conditions and scenarios involving reductions in available fuel supplies with the aim of

decreasing the hardships and inequities that energy shortages could cause. Priority needs must be considered and essential services must be continued, and the public's critical needs in such areas as health, water, food, fire, police, ambulance, and transportation must be provided for. Contingency planning, by its very nature, must consider many factors that are indefinite, while it lays the foundation for rapid and decisive action when the need occurs.

No single solution or set of plans can entirely remove the vulnerability Hawaii faces. However, the State in seeking to reduce the impact of energy vulnerability, works in concert with industry and the county governments to:

- Annually exercise EEP plans statewide;
- Encourage the diversification of energy use;
- Use energy more efficiently;
- Plan and prepare for energy shortages when they occur; and
- Conduct hazard mitigation measures.

12.2 Hazard Mitigation

ERTD conducts hazard mitigation projects in coordination with industry, SCD, and FEMA. The purpose of these projects is to reduce the State's energy vulnerability and to enhance its ability to respond to an energy-related disruption of critical emergency and essential services.

12.2.1 Energy Vulnerability Assessment

The State conducted an energy vulnerability assessment to apply lessons learned during Hurricane Iniki. The assessment had two parts, a primary study of the vulnerability of Hawaii's energy systems to natural disasters (conducted by USDOE), and a supporting study of the impact of coastal flooding (conducted by the CORPS). The *Hawaiian Islands Hazard Mitigation Report*, based on the energy vulnerability assessment by USDOE was completed in September 1996. As a result of the energy vulnerability assessment (35) recommendations were developed pertaining to electric, petroleum, gas, and lifeline service industry considerations (USDOE-OEM 1996, 35) (see Appendix D). In 1999, the CORPS completed a follow-on study of coastal flooding, which identified ten alternative measures for hazard mitigation (see Appendix D). The graphic below depicts Hawaii's utilities' exposure to damage from hurricanes. Noted by the arrow for the Island of Kauai is the actual cost of damages to Kauai Electric caused by Hurricane Iniki in 1992.

12.2.2 State Hazard Mitigation Initiatives

The focus of the State's initiatives is to implement a key recommendation of the *Hawaiian Islands Hazard Mitigation Report*, which proposed the documentation of emergency generator needs. The State is undertaking a two-phase project to

identify existing emergency generators and to determine what facilities require emergency generator support in the event of an emergency.

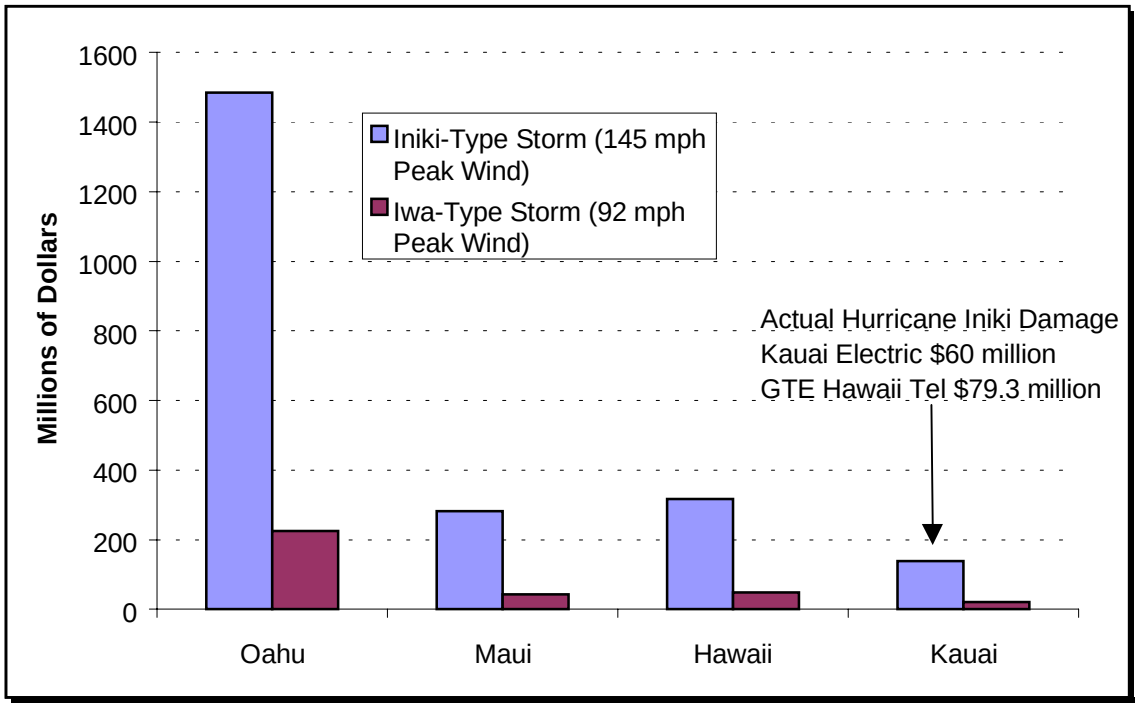

Figure 12.1 Potential Hawaii Hurricane Damage Costs

12.2.2.1 Phase 1 Emergency Generator Survey

The Phase I Emergency Generator Survey will survey emergency and essential service facilities to document the technical specifications of their emergency generators and electricity requirements. A database of the survey information will be produced for the PDC emergency management/geographic information system. Also, the project will advise operators on operation and maintenance measures for improved emergency generator reliability. The State began work on the project in November 1999.

12.2.2.2 Phase 2, Assessment of Facilities Requiring Emergency Generator Support

The Phase 2 assessment will identify the needs of emergency and essential service facilities that will require an emergency generator. Emergency and essential service facilities provide critical public services for the maintenance of the public's safety, health, and welfare. The project will supplement the database developed in Phase 1. The project will document the minimum emergency power needs of facilities, which will enable generators to be allocated effectively in response to an emergency. The data will also be incorporated into the PDC emergency management information system.

12.2.3 Young Brothers Hazard Mitigation Project

To assist interisland barge company Young Brothers in hardening facilities critical to its operations, DBEDT is helping the company to procure two new 275kW diesel emergency generators. The generators will be used to sustain refrigeration container operations and were purchased through the Hazard Mitigation Grant Program. FEMA and Young Brothers will share the $160,000.00 projected cost.

12.3 Energy Emergency Management

The State of Hawaii's Emergency Response Plan is based upon the Federal Response Plan. The Federal Response Plan assigns emergency support function (ESF) responsibilities to specific Federal agencies. SCD, in similar fashion, has provided for State counterpart ESFs. For ESF-12, Energy, USDOE and DBEDT are responsible for coordinating restoration of energy and fuel systems.

12.3.1 The Energy Council

The prototype of the EC organization and process as we know it today was first used by industry and government to coordinate Kauai Electric's safe restoration of the grid after Hurricane Iniki. The organization, then called the "Power Council," facilitated restoration of the system as rapidly as was possible. Its members also coordinated the deployment of temporary emergency generators. The responsibilities of the Energy Council have since been expanded, and the group reorganized, to address the availability and adequacy of fuel supplies, storage, and distribution.

The State continues to work with the EC to improve disaster-related planning and response. The EC's mission is to support the implementation of emergency Support Function -12 (ESF-12) Energy, consistent with the State's *Administrative Plan for State and Federal Coordination, enclosure 7 to Volume III, The State Plan for Emergency Preparedness*. The primary responsibility of the EC is to coordinate activities necessary to facilitate:

- Safe, rapid restoration of the affected utilities' electricity grids;
- Emergency resource acquisition, e.g., temporary emergency generators to safely and rapidly provide and sustain electricity for essential and emergency facilities and services until commercial energy utility service can be restored;
- The availability and adequacy of fuel supplies, storage and distribution; and
- The provision of energy-system situation reports to appropriate government and industry organizations, and to the community-at-large.

For the past three years, the Energy Council has been effectively exercised in the SCD's annual statewide hurricane exercise. Represented on the EC are Hawaii's private sector energy companies, and representatives from supporting agencies within County, State, and Federal governments. The Director of DBEDT, or his designee, chairs the EC and reports directly to the Director of Civil Defense, or

his designee. The structure and membership of the State of Hawaii EC are depicted in the following figure:

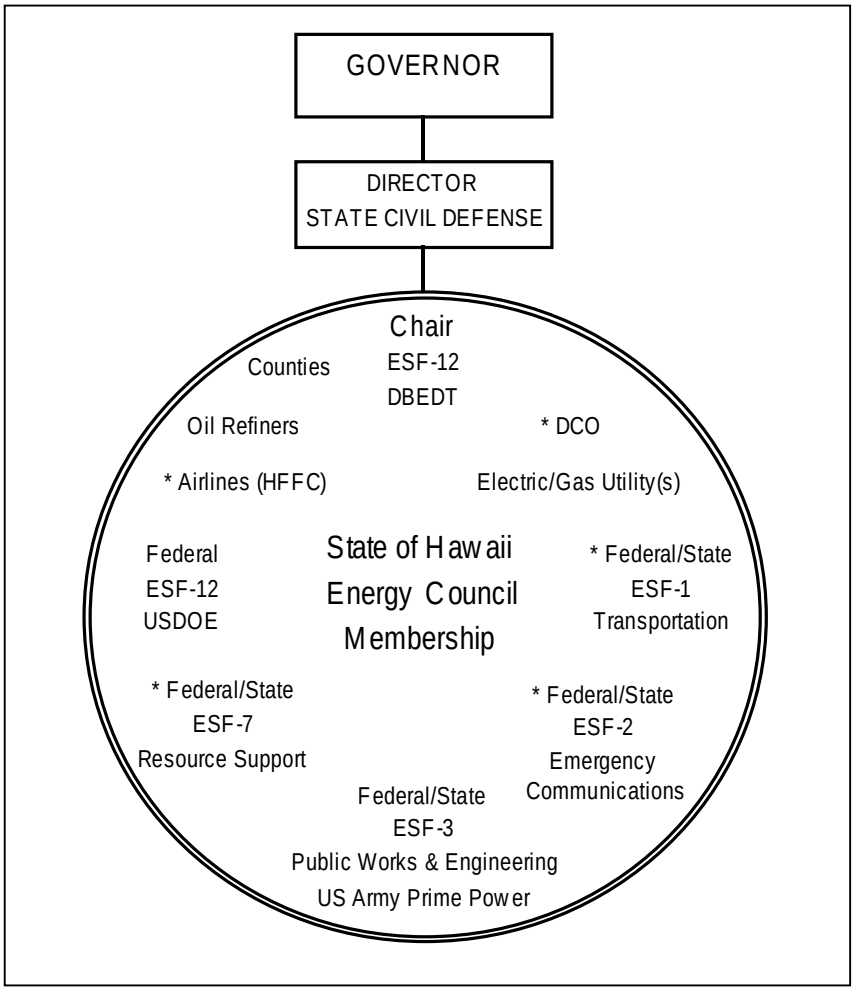

Figure 12.2 State of Hawaii Energy Council Structure and Membership*

12.3.2 Y2K and the Energy Council

Over the last two years, the EC has coordinated dialogue among members to facilitate collaboration on Y2K issues from a comprehensive, statewide, total-energy-system perspective. Energy-related Y2K readiness activities conducted by the EC have included the following:

- Coordination of ESF-12 (Energy) functions related to Y2K;
- Assistance with energy-related Y2K public information activities;
- Collaboration with the energy industry on official briefings;

*Note: Asterisk indicates EC Members that attend daily EC meetings at the Chair's request only when direct coordination and support are anticipated to be required for EC mission accomplishment.

- Development of U.S.-Hawaii Y2K Energy System Readiness Summary (updates July, September, November, and as needed thereafter);
- Participation in Hawaiian Electric Company Y2K exercise, September 1999; and
- Coordination of standby readiness of State of Hawaii Energy Office and EC points of contact over theY2K transition period (12/31/99 and 1/1/00, and as needed thereafter).

The EC meets quarterly, or more frequently, as required, to discuss energy issues, such as the current focus on Y2K compliance.

12.3.3 Makani Pahili 99 Energy Council Exercise

The EC, in coordination with SCD, developed and conducted an energy emergency exercise on May 5, 1999, as part of "Makani Pahili 99," SCD's annual hurricane exercise. The energy exercise focused on the energy-sector aspects of the simulated disaster and on exercising the EC process previously developed in hurricane exercises in 1997 and 1998. The objectives of this year's energy-emergency exercise were as follows:

- To simulate agency activation, disaster management, standard operating procedures, and interaction with an EC;
- To coordinate between industry and other agencies, for effective implementation of EEP response and recovery within the context of a large disaster; and
- To identify energy emergency-related issues for further consideration and resolution; and
- To provide additional testing of the ability of the PDC situation reporting system to coordinate energy system restoration and recovery.

12.3.4 State and County EEP Plan Revision

The State and Counties are continuing efforts to implement the provisions of Act 182, 1992, which called for them to develop integrated and coordinated EEP plans. In 1998, Kauai County administratively approved its EEP plans and formed a County-level Energy Council. Meanwhile, EEP plans drafted for Hawaii County are under discussion and review. Maui County and the City and County of Honolulu EEP plans meanwhile are under development. State EEP plans related to this project have been updated.

12.4 Recommendations for Further Actions

The following recommendations are made to enhance Hawaii's energy emergency preparedness.

12.4.1 RECOMMENDATION: Continue to Support the Readiness of Hawaii's Energy Council and Its Application to Other Jurisdictions

Suggested Lead Organization: DBEDT

The EC meets quarterly, as well as on other occasions, to conduct exercises and to coordinate on issues, such as Y2K. The EC approach used during the May 1998 *Regional Energy Emergency Seminar and Simulation Exercise*, was shared with the Western states and Pacific Island Territories. The EC also shared this approach with FEMA in a Regional Inter-agency Steering Committee meeting held in August 1999.

12.4.2 RECOMMENDATION: Continue to Work with USDOE to Provide for Appropriate Procedures for Rule Making and the Exercise of Hawaii's SPR Priority Access Sales Provisions

Suggested Lead Organizations: DBEDT and USDOE

The State has signed a Memorandum of Understanding with USDOE to implement Hawaii's ability to obtain access to SPR oil during an SPR drawdown and sale. Also, in a preliminary discussion, the State and USDOE considered Hawaii participation in a future SPR exercise.

12.4.3 Continue to Regularly Exercise Government and Industry EEP Plans; Emphasize Preparedness on the Local (First Responder) Level

Suggested Lead Organizations: DBEDT, SCD, the Counties, and industry participants

12.4.4 Complete Emergency Generator Inventories and Database Documentation of Emergency and Essential Service Facilities

Suggested Lead Organizations: DBEDT, State Civil Defense, Counties, and Industry Participants

Phase I initiation of the emergency generator survey will focus on documenting the technical specifications of existing emergency generators in emergency and essential-service facilities. Phase II of this project will document emergency generator needs at emergency and essential-service facilities that do not currently have emergency generators but which require emergency backup.

12.4.5 *RECOMMENDATION: Complete the Young Brothers' Emergency Generator Hazard Mitigation Project*

Suggested Lead Organizations: DBEDT, State Civil Defense, and Young Brothers, Inc.

Agreements are being reviewed for execution by SCD, DBEDT, and Young Brothers the state's only interisland carrier, to acquire two 275 kW diesel generators as emergency backup power. The generators would meet all shore-based power needs for refrigeration of cargo. When the project is complete, Young Brothers will be able to sustain critical barge shipping operations in ports throughout the islands.

12.4.6 *RECOMMENDATION: Continue Progress in Hazard Mitigation to Reduce Hawaii's Energy System Vulnerability*

Suggested Lead Organization: DBEDT

Measures for enhancing EEP contingency planning cited in the 1995 HES report, and progress to date in implementing the recommended measures are documented in Appendix D. The State will continue to monitor and periodically report on efforts towards reducing the vulnerability of Hawaii's energy system.

12.4.7 *RECOMMENDATION: Develop an ESF-12 Concept of Operations for Activating DBEDT Staff During a Disaster or Market Shortage*

Suggested Lead Organization: DBEDT and the Energy Council

This work will include identification and establishment of an alternative meeting place for EC use during an emergency. The facility would require backup emergency power and communications would need to be large enough for contingency use as a Shortage Management Center. DBEDT and the Energy Council will also assess alternative PV power, mobile satellite communication, and mobile trailer options for use if commercial power to ESF-12 offices is lost.

12.4.8 *Continue to Work with the Counties to Complete Administratively Approved County EEP Plans*

Suggested Lead Organization: Hawaii, Honolulu, and Maui Counties

Chapter 125C-32, *Procurement, Control, Distribution and Sale of Petroleum Products*, Hawaii Revised Statutes (Act 182, 1992), requires the development of County EEP plans that are integrated and coordinated with the State's EEP plan. Kauai County already has an administratively approved County EEP plan.